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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/838,235	04/20/2001	Laurence M. Hubby JR.	10007342-1	9228

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EXAMINER	
AKKAPEDDI, PRASAD R	
ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 10/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/838,235	HUBBY, LAURENCE M.	
	Examiner	Art Unit	
	Prasad R Akkapeddi	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 July 2004.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 and 21-26 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-15 and 21-26 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 20 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07/12/2004 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

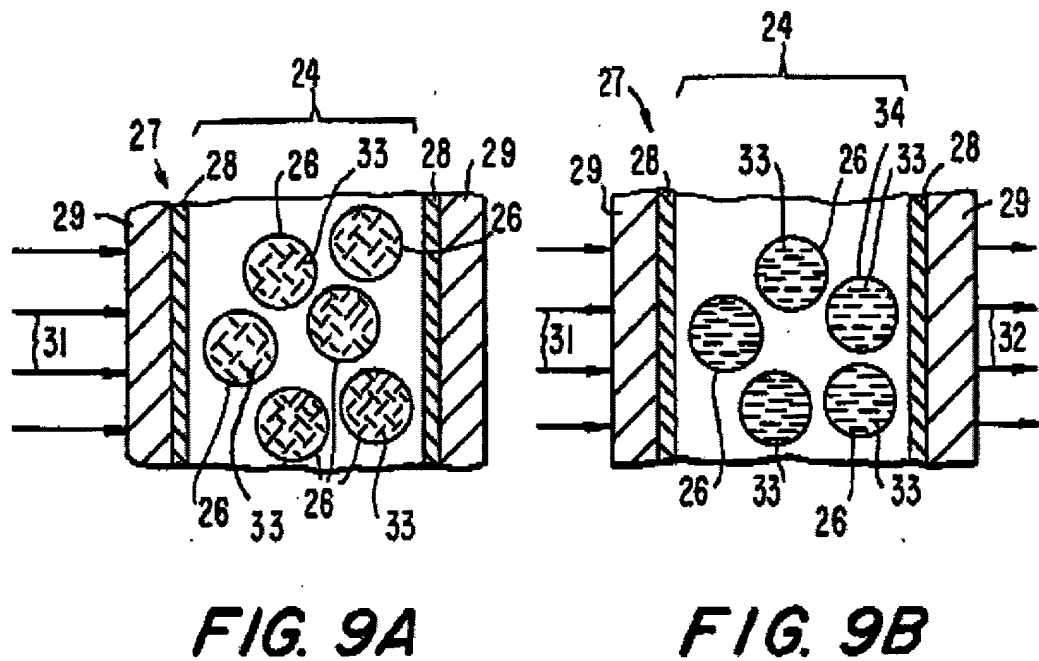
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-15 and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Check III (Check) (U.S. Patent No. 5,463,491) in view of Silverstein et al. (Silverstein) (U.S. Patent No. 6,339,463).

As to claim 11 and 21: Check discloses a visual image display (alphanumeric display col. 1, lines 39-40), with a liquid light valve suspension in which plurality of small particles are dispersed (col. 2, lines 53-55) (hence a suspended particle light valve device) and the particles are capable of reflecting and absorbing light (col. 3, lines 19-21), a pair of electrodes (28) on the opposite surfaces (Fig. 5) and the dependence of the orientation of the particles with the

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application of the electric field is shown in Figs. 9A and 9B., i.e., Fig. 9A has no electric field applied and Fig. 9B shows the alignment of the particles with the applied electric field (col. 11, lines 50-62).



Check however does not disclose a fiber-optic faceplate.

Silverstein in disclosing a non-polarizer based color reflective liquid crystal display using a fiber-optic faceplate (Fig. 6a) discloses a fiber-optic faceplate (50) and a polymer dispersed liquid crystal (40) underneath the faceplate. Due to the nature of the polymer dispersed liquid crystal material, Silverstein's LC material can also be considered as having particles suspended in a suspension as can be seen from Figs 4-5. The alignment of the particles or droplets with the application of the electric field can be seen in Figs. 5a and 5b.

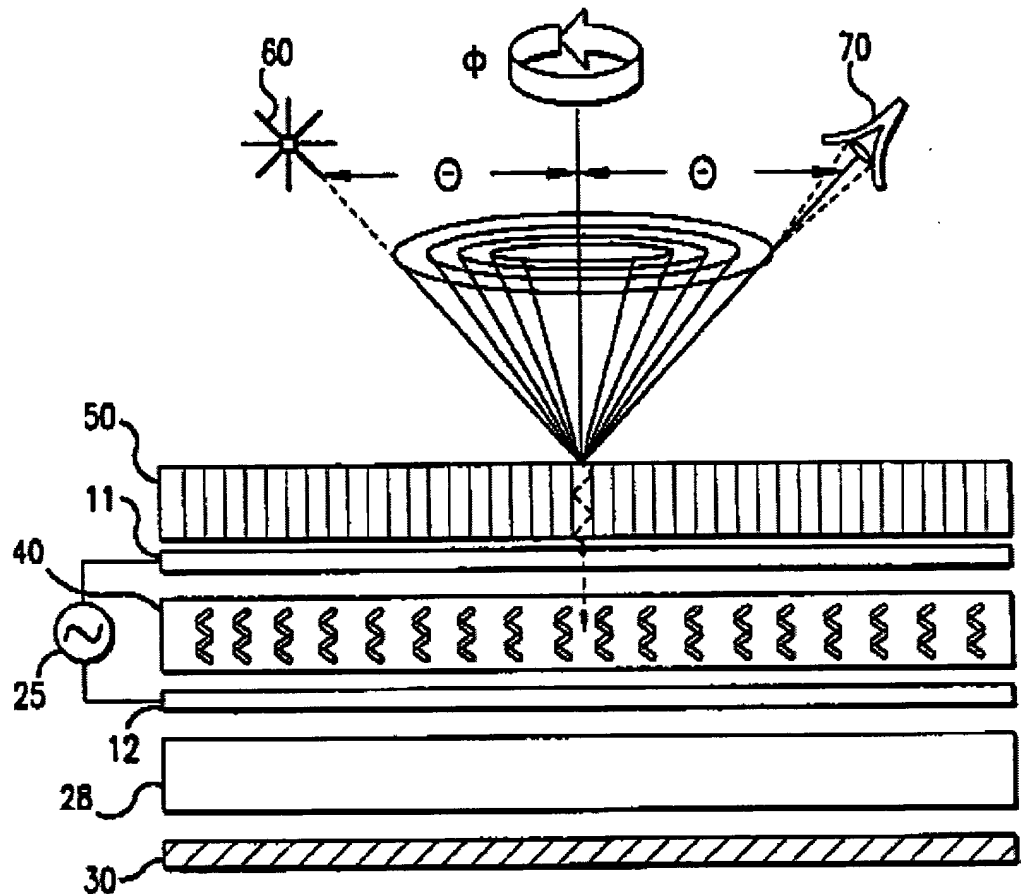


FIG. 6a

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the fiber-optic faceplate as disclosed by Silverstein to the device of Check to enhance light collection efficiency and viewing angle performance. The fiber-optic faceplate also improves overall off-specular viewing performance and chromaticity and effective reflected luminance for larger viewing angles and may eliminate noticeable inhomogenities (col. 3, lines 22-37).

As to claim 1: Silverstein discloses that the fiber-optic faceplate has an upper face, a lower face and a multiplicity of straight optical fibers positioned between the upper and the lower faces and the longitudinal axes of the optical fibers are parallel to each other and substantially perpendicular to the upper and lower faces (Figs. 6a and 6b) and the collection and projection of light rays from a light source (60) is shown in Figs. 6a and 6b and disclosed in (col. 5, lines 10-15). Both Silverstein (Figs 5a and 5b) and Check (Figs. 9a and 9b) disclose a pair of electrodes and the orientation of the particles with an electric field as discussed above.

As to claim 2: Silversten discloses a transparent conductive layer (ITO, col. 5, lines 7-9).

As to claims 3 and 12: Check discloses perimeter seals (15).

As to claims 4, 5, 13 and 14: Check shows the orientation of the particles with the electric field and the transparency of the light rays in Fig. 9B and the opaqueness of the light and the randomization of the particles in Fig. 9A.

As to claims 8,9: Check in disclosing a light valve, discloses a film with particles suspended in droplets of a liquid light valve suspension (col. 2, lines 21-39). Check also discloses a film, a fluid (col. 2, lines 25-26 and col. 15, lines 34-52).

As to claim 10: Check discloses an index matching fluid (col. 19, lines 65-67).

As to claim 22: Check discloses the suspension (24) between the first and second electrodes (28) (Fig. 5a).

As to claim 23: Silverstein shows the polymer dispersed liquid crystal material (40) sandwiched between the faceplate (50) and the substrate (30) as shown in Fig. 6a.

4. Claims 6,15 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Check in view of Silverstein as applied to claims 1, 11 and 21 above, and further in view of Ishii et al. (Ishii) (U.S.Patent No. 5,148,297).

Though both Check and Silverstein disclose a color display device, neither of them explicitly discloses color filters positioned on a rear substrate.

Ishii on the other hand, in disclosing a liquid crystal display device employing fiber optic faceplate elements, discloses color filter (15a) (col. 2, lines 54-55) on a rear substrate (11b) (Fig. 8), which is positioned underneath the Liquid crystal cell. (note: Ishii teaches that the color filter can be positioned at various locations in the device (col. 6, lines 14-18).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the color filter as disclosed by Ishii to attain great effect in a portable visual apparatus such as color TV, a game or a lap top personal computer, a projection type TV or display for meeting presentations (col. 4, lines 46-51).

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Check in view of Silverstein as applied to claim 1 above, and further in view of Hubby Jr. (U.S. Patent No. 5,181,130).

Silverstein discloses that the fiber optic faceplate includes an array of individual optical fibers that are fused and cut and polished to a desired thickness to form a plate (col. 3, lines 5-9). However, Silverstein does not explicitly disclose the cut dimensions of the fiber-optic faceplate.

Hubby Jr. on the other hand, in disclosing a fiber optic faceplate liquid crystal display, discloses a fiber-optic faceplate (619) can be fabricated to a thickness in the range of 0.7 to 5.0 millimeters, preferably about 3.0 millimeters (col. 8, lines 28-30).

Note that the range for the thickness of the faceplate as disclosed by Hubby Jr. overlaps the range of approximately 0.25 to 5.0 mm (asserted in claim 7). Therefore, the range in claim 7 would have at least been obvious. See In re Malagari, 499 F.2d 197, 182 USPQ 549 (CCPA 1974).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the Check and Silverstein LCD device with the thickness of the faceplate within the range of approximately 0.25 to 5.0mm such that the faceplate appears more brightly illuminated than a conventional device under a wide range of ambient lighting conditions due to the superior light diffusion characteristics of the fiber faceplate (col. 5, lines 50-55).

6. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Check in view of Ishii.

As to claim 25: Check discloses a suspended particle device as discussed above.

However, Check does not disclose either a color filter on a substrate or a fiber-optic faceplate on the suspended particle device.

Ishii discloses a substrate (11b), liquid crystal layer (13b) and a fiber-optic faceplate (16) on the liquid crystal layer (Fig. 4). Although a liquid crystal layer is considered to be a suspended particle device, the teachings of Check as they apply to the suspended particle device are equally applicable to liquid crystal devices as taught by Check (col. 3, lines 19-52).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the color filter as disclosed by Ishii to attain great effect in a portable visual apparatus such as color TV, a game or a lap top personal computer, a projection type TV or display for meeting presentations (col. 4, lines 46-51).

As to claim 26: Ishii discloses a sealing compound (12) for sealing the liquid crystal layer (13a or a3b) to the faceplate (16). (Note: Ishii teaches two faceplates attached to each other at the center line, he also teaches that the two parts can be separately formed and then put together at C point (col. 3, lines 62-

67)). Depending upon the viscosity, hence flexibility of the sealing compound, it will allow motion of the faceplate relative to the suspended particle device.

Response to Arguments

7. Applicant's arguments with respect to claims 1-16 and 21-23 have been considered but are moot in view of the new ground(s) of rejection.

In addition, the Examiner would like to respectfully point out the following additional points:

(1) The applicant goes into great discussion about the different approaches for modulation of light taken by the applicant and the cited prior art by Silverstein (pages 7 and 8 of the Remarks submitted on 07/12/2004).

It is respectfully pointed out that in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., different modulation methods) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

(2) The applicant claims that Check makes no mention of liquid crystal displays (page 8, lines 18-19) and that Check makes no mention of the advantage of suspended particle devices relative to liquid crystal displays and do not require polarized light and hence brighter in their "on" state.

Check's teachings apply to active matrix displays and alphanumeric displays and this reference was used due to the explicit teachings of the light

valve suspension medium. However, Silverstein does not mention light valves but does teach polymer dispersed liquid crystals which can also be considered as a suspended particle medium (as can be seen in Fig. 5 of Silverstein) and Silverstein does teach that no polarizers are required and the brightness in an "on" state in (Fig.5B) due to the alignment of the particles with the applied electric field. By the way, Check's does not teach the use of polarizers for his device also instead teaches that the particles in the medium provide the light polarization (see claim 14).

(3) The Applicant goes into extensive argument about the office action performing a mechanical analysis of obviousness and that the office action does not consider that Silverstein's approach is fundamentally different and there is no motivation to combine the references etc. (page 9, lines 20-23 and page 10, lines 3-23). The Applicant also alleges that the office action 'admonishes' the undersigned..... on page 9, lines 20-23.

As is already pointed out above, Check reference was used due to the explicit teachings of the light valve suspension medium. However, Silverstein does not mention light valves but does teach polymer dispersed liquid crystals which can also be considered as a suspended particle medium (as can be seen in Fig. 5 of Silverstein) and Silverstein does teach that no polarizers are required and the brightness in an "on" state in (Fig.5B) due to the alignment of the particles with the applied electric field. By the way, Check's does not teach the use of polarizers for his device also instead teaches that the particles in the

medium provide the light polarization (see claim 14). The motivation to combine the references is already given above in paragraph 3. The office action is merely citing a case law and hence is NOT admonishing the Applicant.

(4) Regarding arguments for claims 25 and 26 (page 12, lines 5-17), since these are new claims, there were no statements given in the previous office action, as alleged by the applicant. However, the present office action rejects these new claims as unpatentable over Check in view of Ishii as explained in paragraph 6 above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prasad R Akkapeddi whose telephone number is 571-272-2285. The examiner can normally be reached on 7:00AM to 5:30PM M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

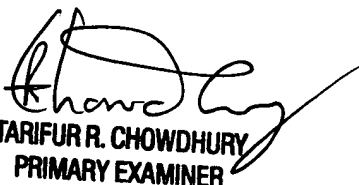
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Examiner
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PRIMARY EXAMINER